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A PARTICULAR

**ACCOUNT**

OF ALL THE

**EARTHQUAKES**

That have happened in

***GREAT-BRITAIN,***

FROM

The Reign of King WILLIAM *the Con-*  
*queror,* to the present Time.

INTRODUCED

With an ACCOUNT of, and OBSERVATIONS upon,  
the most probable THEORIES that have been offered for  
explaining the *Nature* and *Causes* of EARTHQUAKES;  
and the *Signs* and *Prognostications* generally observed to  
precede or accompany them in these and other Parts of  
the World.



L O N D O N:

Printed for W. OWEN, near *Temple-Bar.*

MDCCL.

A PARTICULAR

# ACCOUNT

OF ALL THE

## EARTHQUAKES

THAT HAVE OCCURRED IN

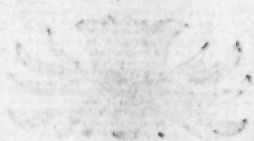
### GREAT-BRITAIN,

FROM

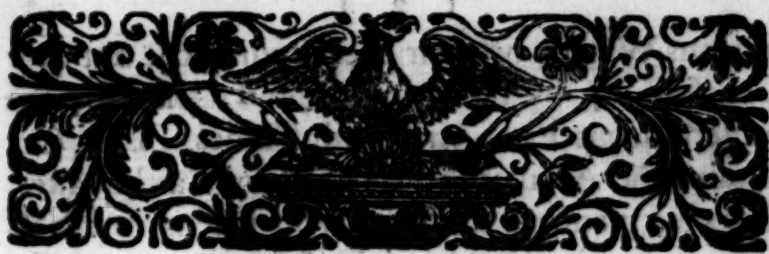
The Reign of King William the Conqueror, to the present Time.

INTRODUCED

By an Account of the Observations upon the most probable Causes, and the Effects of the same, in the History of the Earthquakes, and the Signs and Consequences generally observed in the Progress of such a Motion in this and other Parts of the World.



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A PARTICULAR  
ACCOUNT  
Of all the  
EARTHQUAKES, &c.

**T**HE great Mr. *Boyle* thinks, that Earthquakes are often occasioned by the sudden Fall of ponderous Masses in the hollow Parts of the Earth, whereby those terrible Shocks and Shakings are produced. To illustrate this, it must be observed, that the Earth every where abounds in huge Caverns, Veins, and Canals, particularly about the Roots of Mountains; some of these are full of Water, others of Exhalations; and some Parts of the Earth are replete with Nitre, Sulphur, Bitumen, Vitriol, &c. Now when the Roots or Basis of some large Mass, being dissolved, or worn away, by some Fluid underneath, it sinks into the same, it may very well, by its own Weight, occasion a Noise and Tremor of the adjacent Parts; or the subter-

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raneous

aneous Waters, by their overflowing, cut out new Courses; or, by being heated and rarified by the subterraneous Fires, may emit Fumes, Blasts, &c. Again, the Air may be the Cause of Earthquakes, by being pent up too closely in the narrow Viscera of the Earth, where the subterraneous, or its own native Heat, rarifying and expanding it, the Force wherewith it endeavours to escape, may shake the Earth. In short, that Air, Fire, and Water, are the Causes of Earthquakes, all Naturalists agree, some attributing them to the one, and some to the others of them, for they are any one of them sufficient to produce all the Phenomena of Earthquakes. As to the Air, one single Property of it, its Spring or Elasticity, is sufficient to bring about the most extraordinary Revolutions in Nature, and there are ten thousand Experiments which prove the wonderful Operations that are performed by it; a few Cubic Feet of Air, rarified by Fire, in a little Mine, are sufficient to blow up a Bastion, with the Battalions that are upon it. In short, all the great Phenomena of Nature owe their Original to the Elasticity of the Air, according as it is differently condensed or dilated, by the different Causes that act upon it.

*M. Amontons*, in the *Memoirs de l'Acad. des Sciences*, *An. 1703*, has an express Treatise to prove, that on the Foot of the new Experiments of the Weight and Spring of the Air, a moderate Degree of Heat may bring the Air into a Condition capable of causing Earthquakes: For this Purpose he observes, that at the Depth of 43,528 Fathoms



Fathoms below the Surface of the Earth, the Air is only  $\frac{1}{4}$ th less heavy than Mercury. Now this Depth is only a  $\frac{7}{4}$ th Part of the Semi-Diameter of the Earth; and the vast Sphere beyond this Depth, may probably be only filled with Air, which will be here greatly condensed, and much heavier than the heaviest Bodies we know of in Nature. It is found by Experiment, that the more Air is compressed, the more does the same Degree of Heat increase its Spring, and the more capable does it render it of a violent Effect; and that, for Instance, the Degree of Heat of boiling Water increases the Spring of the Air above what it has in its natural State, in our Climate, by a Quantity equal to a third of the Weight wherewith it is pressed: Whence we may conclude, that a Degree of Heat, which, on the Surface of the Earth, will only have a moderate Effect, may be capable of a very violent one below; and as we are assured, that there are in Nature Degrees of Heat much more considerable than that of boiling Water, it is very possible there may be some, whose Violence, farther assisted by the exceeding great Weight of the Air, may be more than sufficient to break and overturn this solid Orb of 43,528 Fathoms, whose Weight, compared to that of the included Air, would be but a Trifle.

That Fire may be the Cause of Earthquakes, is highly probable. Dr. Lister, in the *Philosophical Transactions*, No. 157, is of Opinion, that the material Cause of Thunder, Lightning, and Earthquakes, is one and the same, viz. the in-

flammable Breath of the Pyrites, which is a Sulphur that actually takes Fire of itself; the Difference is, that one is fired in the Air, the other under Ground; for what is burnt with Lightning smells of Brimstone, and the sulphureous Stench of Waters is perceived before Earthquakes, and in the Air itself after them. They also agree in the manner of their Noise; the one rolling and ratling through the Air, and the other fired under Ground, in like manner moves with a desultory Noise. Thunder, which is the Effect of the trembling of the Air, caused by the same Vapours dispersed through it, has Force enough to shake our Houses, and why may there not be Thunder and Lightning under Ground, in some vast Repositories? since the Matter which composes the noisy Vapour above us, is in much larger Quantities under Ground; for that the subterraneous Cavities are at certain Times, and in certain Seasons, full of inflammable Vapours, the Damps in our Mines sufficiently witness, which when fired, do every thing, in a lesser Degree, as in an Earthquake. Add, that the Pyrites alone, of all known Minerals, yields this inflammable Vapour, is highly probable; because no Mineral or Ore whatsoever is sulphurous, but as it is wholly, or in part, a Pyrites; and there is but one Species of Brimstone, at least here in *England*, which the Pyrites alone naturally yields. That one Reason, why *England* is so little troubled with Earthquakes, and *Italy*, and all the *Mediterranean* Coasts, so very much, is because the Pyrites, with which the Vulcanoes in *Italy* abound,

abound, are more sulphurous than ours; some of which are very lean, and hold but little Sulphur. Another Reason, is the Scarcity of Pyrites in *England*; besides, our subterraneous Cavities are small and few, compared to the vast Vaults in those Parts of the World, as is evident from the sudden Disappearance of whole Mountains and Islands.

— This is Dr. *Lister's* Theory of Earthquakes: The principal Objection to which, seems to be, the Improbability that a *Body* should be kindled, or take Fire, by itself; but the Pyrites, both in Gross and in Vapour, is actually fired of its own accord, as Damps naturally take Fire of themselves; and, as the Dr. observes, Vegetables will heat and take Fire of themselves, as in the frequent Instance of wet Hay. Again, the *Vulcanoes* all over the World argue as much; for it is very improbable that they are Mountains consisting in a great Measure of Pyrites, as appears by the Quantities of Sulphur thence sublimed and the Application of the Loadstone to the ejected Cinders.

— Dr. *Woodward* has given us another Theory of Earthquakes, built upon the united Power of Fire and Water. He supposes the subterraneous Heat or Fire (which is continually elevating the Water of the Abyss to furnish the Earth with Rain, Dew, Springs and Rivers) when it is stopped in any Part of the Earth, and diverted from its ordinary Course by some accidental Glut or Obstruction in the Pores or Passages, through which it used to ascend to the  
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the Surface, becomes, by this Means, præternaturally assembled in a greater Quantity than usual into one Place; and therefore causes a great Rarefaction and Intumescence of the Water of the Abyss, putting it into very great Commotions and Disorders, and at the same Time making the like Effort on the Earth, which is expanded upon the Face of the Abyss; and that this occasions that Agitation and Concussion of it which we call an Earthquake. That this Effort is in some Earthquakes so vehement as to split and tear the Earth, making Cracks and Chasms in it some Miles in Length, which open at the Instant of the Shock, and close again in the Intervals between them; and sometimes it is so extremely violent that it forces the superincumbent *Strata*, breaks them all throughout, and thereby perfectly undermines and ruins the Foundation of them, so that these failing, *the whole Tract*, as soon as the Shock is over, sinks down into the Abyss, and is swallow'd up by it, the Water thereof immediately rising up and forming a Lake in the Place where the Tract was before: That several considerable Tracts of Land, and some with Cities and Towns standing upon them, as also whole Mountains, have been thus totally swallowed up: That this Effort, being made in all Directions indifferently, upwards, downwards, and on every Side, the Fire dilating and expanding on all Hands, and endeavouring to make its Way through all Obstacles, falls as foul upon the Water of the Abyss beneath, as upon the Earth above, forcing it out  
which



which Way soever it can get Vent, as well through its ordinary Exits, Wells, Springs, and the Outlets of Rivers, as through the Chasms then newly opened, or the Spiracles of Vulcanoes, and those Hiatus's at the Bottom of the Sea, whereby the Abyfs below opens into it, and communicates with it. That as the Water resident in the Abyfs, is in all Parts of it stored with a considerable Quantity of Heat, and more especially in those where these extraordinary Aggregations of this Fire happens, so likewise is the Water which is thus forced out, insomuch that when thrown out, and mixt with the Waters of Wells, Springs, Rivers, or the Sea, it renders them very sensibly hot. That the Fire itself thus pent up, which is the Cause of all this, also makes its own Way by whatever Passage it can get Vent, through the Spiracles of the first Vulcanoes, or through the Cracks and Openings of the Earth : That there is sometimes in Commotion a Portion of the Abyfs of that first Extent, that the Earth incumbent upon it is shaken at the same Instant of Time in Countries many hundreds of Miles distant from each other, even though they happen to be parted by the Sea lying between them ; and there want not Instances of such a universal Concussion of the whole Globe, as must needs imply an Agitation of the whole Abyfs : That though the Abyfs be liable to these Commotions in all Parts of it, and therefore no Country can be wholly exempted from the Effects of them, yet they are no where very remarkable, nor are there usually any great Damages

Damages done by Earthquakes, except in those Countries which yield great Store of Sulphur and Nitre, or are mountainous, and consequently stony and cavernous underneath, which making the strongest Opposition, suffer more than those Parts of the Earth which consist of Gravel, Sand, and the like laxer Matter, which more easily give Way ; and hence it is, that there are such frequent and dreadful Earthquakes in *Italy, Sicily, &c.* these Countries being all mountainous and cavernous, abounding with Stone and Marble, and affording great Plenty of Sulphur and Nitre : That *Ætna, Vesuvius, Hecla*, and the other Vulcanoes, are so many Spiracles serving for the discharge of the subterraneous Fire when preternaturally assembled ; that when there happens to be such a Structure and Conformation of the interior Parts of the Earth, as that the Fire may pass freely from its Caverns, to those Spiracles, it then easily gets out without shaking or disturbing the Earth ; but when such Communication is wanting, or the Passages not sufficiently large and open, so that it cannot reach the Spiracles without first forcing and removing all Obstacles, it heaves up and shocks the Earth, till it has made its Way to the Mouth of the Vulcano, where it rushes out sometimes in vast Flames, and with great Velocity and Noise ; and hence there are scarce any Countries much annoyed with Earthquakes, that have not one of these fiery Vents, which is constantly in Flames when any Earthquake happens, disgorging the Fire which, whilst imprison'd, was the Cause of the Disaster ;

Disaster; so that we may see how these Vulc-  
 noes, which are look'd upon as so many Plagues  
 and Calamities in those Countries where they  
 are, are appointed by God for their Safety and  
 Preservation. It is through these Vent-holes  
 that all those combustile Ingredients, which  
 kindle so dreadful a War in the Bowels of the  
 Earth, discharge their Fury ; which, otherwise,  
 wherever they meet with any Resistance to ob-  
 struct their Passage, make the very Earth to  
 shake and tremble from the Center to the Sur-  
 face, overthrow whole Towns, and would lay  
 in Ruin whole Kingdoms, had not Providence,  
 which weighs both the Usefulness and dange-  
 rous Effects of these tremendous Forces, thus set  
 Bounds to their Power. Upon the Whole, this  
 Theory of Dr. *Woodward's* seems much the best  
 of any yet laid down for explaining the Nature  
 and Causes of Earthquakes, and best adapted  
 to solve their various Phænomena. That there  
 is a vast Collection of Waters lodged in the  
 Bowels of the Earth, constituting an huge Orb  
 in the interior or central Parts of it, is confirm-  
 ed by abundance of Observations. This is what  
*Moses* calls the great Deep, and many Authors  
 call the *Abyss*, the Water of which the Dr. asserts  
 does communicate with that of the Ocean, by  
 means of certain Holes, Hiatus's or Chasms, pas-  
 sing between it and the Bottom of the Ocean ;  
 and this will account for that most surprizing and  
 dreadful Commotion and Disorder of the Sea  
 in some Earthquakes ; for the Waters of the  
 Abyss being forced through the Hiatus at the

Bottom of the Sea with great Vehemence, puts it into the most violent Ferment, making it rage and roar with a most hideous and amazing Noise, though the Wind at the same Time is still; oversetting Ships in the Harbours, and by its Inundation overwhelming and drowning the adjacent Country. Hence also it is, that Water issues out of the Chasms made by Earthquakes, in vast abundance, spouting up in Streams to an incredible Height, and this oftentimes at many Miles distant from the Sea: That these Phœnomena are not new, or peculiar to the Earthquakes which have happened in our Times, but have been observed in all Ages, we may learn abundantly from the History of former Times. We find from the Accounts of the Ancients, that Waters burst out when the Body of the Earth opens, in the same Manner as Water enters through the Seams of a Ship; nay, they give an Account not only of Streams but Deluges of Water that drowned whole Cities. Thus *Pliny*, Lib. xxxi. 4. affirms, that Earthquakes pour out and drink up Waters; therefore it is not surprising that we have Accounts of Lakes, Fountains, or Rivers breaking out, where there were none before, and of others being dried up. And hence, many of the Ancients concluded rightly enough, that Earthquakes were caused by the Impulses and Fluctuation of Water in the Bowels of the Earth, and therefore they frequently called *Neptune* by Epithets which denoted his Power of shaking the Earth. They supposed that



that he presided over all Water whatever, as well that within as without the Earth, and that he had Power to calm and compose it, as well as to move and disturb it, and the Earth by the Means of it; and hence they called him *αἰθερίας*, the *Establisber*, under which Name several Temples were consecrated to him, and Sacrifices offered, whenever an Earthquake happened, to pacify and appease him.

The Ancients have also taken Notice of much the same Appearances in Earthquakes, as what have usually happened in our Times. As first, a Tremor, which *Aristotle* and *Pliny* call the first Species or Degree of Earthquakes, and which they compare to the shaking Fit of an Ague, causing such a Motion as shakes the Earth from Side to Side. The second Sort *Aristotle* and *Pliny* call a Pulse, or Stroke, from its Resemblance to the beating of an Artery, and by *Possidonius* in *Seneca*, is represented by the Name of Vibrations, it being a perpendicular Lifting-up of the Earth. The last Sort is an Inclination or Nutation of the Earth, like that of a Ship; these various Motions have also been observed by modern Philosophers to succeed one another alternately, and that the Nutations and Oscillations are made in parallel Circles of the Earth. *Aristotle* tells us, that Earthquakes are most frequent in Spring and Autumn, in which there is a greater abundance of Vapours, and a larger Quantity of Nitre exhaled, which Ingredients conspire to the Production of an Earthquake. This Observation will be found to hold good in

most Earthquakes that have happened for many Years past. *Pliny* also observes, that sometimes terrible Sounds, Bellowings, and Shouts like human, usher'd in Earthquakes. And there are seldom or never any Earthquakes now, but are accompanied by a Cracking in the Air, and a horrid Noise, like the Thunder of large Cannon, or rather, the Noise of an Earthquake seems to be *Sonus sui Generis*, for there is no describing it. As to other previous Signs or Notices of the Approach of Earthquakes, there are none that can be certainly depended on ; there are indeed some general Symptoms which have been observed most usually to precede Earthquakes, but they have often fail'd ; *Ignes fatui* have been frequently seen before Earthquakes, which indeed is a probable Argument to shew that the Earth is then full of Damps and Exhalations ; and a Stench that tainted Well-water in an unusual Manner, has upon the same Account been generally reckoned among the Signs of an Earthquake, and by which it may be predicted ; for by this it was, that *Pherocydes* is said to have presaged the Earthquake at *Lacedemon* ; and *Helmont* mentions another who pretended to the same Foresight, by tasting the Water of a very deep Well in the Castle of *Louvain*. An unusual Brightness of the Sky, the Stars shining and twinkling, remarkable Serenity and Stillness of the Air, &c. have been often observed as Indications of Earthquakes. But in the great Earthquake which happened in *New-England*, *Mr. Lowel*, Minister of *Newbury*, which seem'd

to

to be the Center of the Earthquake, observed, and transmitted an Account, that the Prognostications usually preceding their Earthquakes, all failed in this ; that he heard the Rumbings in all Weathers, cloudy, foggy, rainy, snowy, clear, cold, hot, moderate, windy, calm, &c. indifferently ; and at all Hours of the Day and Night, when the Wind has been at any Point of the Compass, and at all Times of the Tide ; and as to the Moon, equally when she was nearer or farther from her Change or Full ; neither in any particular Weather, nor on any observable Occasion, were the Shocks greater or Rumbings louder. In short, there seems to be as little Certainty in the Signs or Indications of Earthquakes, as in the Theories offered by Naturalists for explaining the Causes of them ; and those it must be owned, after all their Enquiries and Observations, are only imaginary, and mere Conjectures. It is an Observation of a very ingenious Writer, that our Theories, however natural they may seem at first View, have always some Mark in Nature set upon them, to discover them to be false. Whether this Assertion be strictly true or not, shall not be enquired into here, yet thus much is certain, as the same Author observes, that we know little of the Causes of Things, but may see Wisdom enough in every Thing. Physical Knowledge, taking in the whole Compass of Nature, is too vast a Subject to be comprehended by the human Mind. Those who are most conversant in Philosophical Enquiries, who endeavour to trace Nature in her inward Re-

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cesses and latent Motions, know best how much these are hid from their Comprehension. Such Men (it has been well remark'd) by looking into her, and observing her in all her Windings and Mazes, find Matter enough for Wonder, and Reason to adore the Wisdom of God, but at the same Time only meet with Mortification to their own Wisdom, and are forced to confess that the Ways of Nature, like those of God, are past Man's finding out. It is with our Philosophy, as with ourselves ; no Certainty in the one, nor any thing like Perfection in the other ; as he who has the fewest Faults is the best Man, so is that System the best which is the most plausible, and seems liable to the fewest Objections, for some their will be to every Human System.

We shall now proceed to give an Account of the Earthquakes which have happened in our own Country, which is reckoned among those Parts of *Europe* least liable to violent Earthquakes, and yet our Historians mention several.

*Matthew Paris* gives an Account of an Earthquake attended with a great Noise, *April 6, 1081*, in the 15th Year of *K. William the Conqueror*.

And in the Year 1088, in the Time of *K. William II.* there was an Earthquake, followed with such unseasonable Weather, that there was no Seed-Time till *December*.

In the next Reign, that of *Henry I.* there was another which shook down many Houses ; and *William of Malmshury* says, the House where he was, lifted up with a double Remove, and at  
the



the third Time settled again in its proper Place ; and in divers Places the Earth groan'd with an hideous Noise, and cast out Flames at certain Rists for many Days together.

In the Year 1133, *Matthew Paris* mentions a great Darkness in *England*, and an Earthquake at the same Time.

He mentions another, on the 26th of *January*, 1165, in the 11th Year of *Henry II.* in *Norfolk*, *Suffolk*, and the Isle of *Ely*, which threw down many Persons who were standing or walking, and made the Clocks to strike, and the Bells to ring in the Steeples.

In the 24th Year of the same Reign, in the Territory of *Darlington*, in the Bishoprick of *Durham*, the Earth, says *Sir Richard Baker*, lifted itself up in Manner of a high Tower, and so remained unmoveable from Morning till Evening, and then fell with so horrible a Noise, as frightened the Inhabitants thereabouts, and the Earth swallowing it up, made there a deep Pit, which is seen to this Day ; the Pits in that Place are commonly called Hell-Kettles.

On the 25th of *April*, 1180, a great Earthquake threw down many Buildings, amongst which the Cathedral Church of *Lincoln* was rent in Pieces.

In *April* 1247, *Matthew Paris* tells us of an Earthquake at *London*, which was most sensibly felt on the Banks of the River *Thames*, and shook and threw down many Buildings.

The same Historian also mentions another Earthquake in the next Year 1248, which did

a great deal of Mischief, especially in the Diocese of *Bath*, the Bishop whereof gave him an Account of it.

He also takes Notice of another Earthquake in *England*, two Years afterwards, in 1250.

Sir *Richard Baker* and Mr. *Cambden* give us an Account of a prodigious Earthquake which happened in the 13th Year of *Q. Elizabeth*, 1571, in the East Parts of *Herefordshire*. On the 17th of *February*, at Six a Clock in the Evening, the Earth began to open, and an Hill, with a Rock under it, (making at first a horrid bellowing Noise, which was heard a great way off) lifted itself up to a great Height, and began to move, bearing along with it the Trees, the Sheep-folds and Flocks of Sheep, which were upon it at that Time. It left a Gap in the Place from whence it first moved, of 40 Foot broad, and 80 Ells long; the whole Field being above 20 Acres: Passing along, it overthrew a Chapel standing in the Way, removed a Yew Tree planted in the Church-yard, from the West to the East, and drove all before it, Highways, Hedges, Trees, Sheep-folds, &c. made Till'd Ground Pasture, and turned Pasture into Tillage; and having travelled in this surprising (we might say almost incredible) Manner, from *Saturday Evening* till *Monday Noon*, it then stood still.

Anno 1588, the like Prodigy happened in *Dorsetshire*, as the same Historians relate. A Field of three Acres, with the Trees and Fences, in *Blackmore*, moved from its Place, and passed over  
another

another Field, travelling in the High-way that leads to *Herne*, and there stayed.

In the 23d Year of Queen *Elizabeth*, Anno 1580, there was an Earthquake felt not far from *York*, in *London*, and other Places between, *Camden* gives this Account of it. ‘ On the 6th

‘ Day of *April*, at 6 o’ Clock in the Evening,  
 ‘ the Air being clear and calm; *England* on this  
 ‘ Side *York* (and the *Netherlands* almost as high as  
 ‘ *Cologne*) in a Moment, as it were, fell a trem-  
 ‘ bling in such a Manner, that in some Places  
 ‘ Stones fell from Buildings, the Bells in the  
 ‘ Steeples rang, and the Sea, till then very  
 ‘ calm, was vehemently tossed and moved too  
 ‘ and fro. The Night following the Ground in  
 ‘ *Kent*, trembled two or three Times; and also  
 ‘ on the 1st of *May*, in the Dead of the Night.’

This threw the People into so great a Conster-  
 nation; that the pious Arch-Bishop *Grindal*, to  
 stir up them to Devotion and Repentance, wrote  
 a Letter and Charge to his Arch-Deacon, that  
 Orders might be given to every Parson, Vicar,  
 and Curate of the peculiar Jurisdiction of the  
 Deanry of the Arches in *London*, ‘ That they  
 ‘ exhort their Parishoners to resort devoutly to  
 ‘ their Churches on *Wednesdays* and *Fridays*,  
 ‘ to hear some short Exhortations to Repentance,  
 ‘ either by preaching or Homilies, with other  
 ‘ Service of the Day; and that they do of their  
 ‘ own Accord without Constraint of Law, on  
 ‘ those Days spare one Meal, converting the same,  
 ‘ or some Part of it, to the Relief of the Poor,  
 ‘ calling also their Households together at Night

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‘ to

‘ to make hearty Prayer to God, to shew Mercy  
 ‘ to us who have deserved his Anger ; and that  
 ‘ with the Litany they join such Psalms and  
 ‘ Prayers as they shall chuse, or devise, fit for that  
 ‘ Purpose.’ Besides this Order, the good Arch-  
 Bishop also composed a Prayer for Families,  
 throughout his Diocess, which was thought so  
 seasonable and proper, that the Lords of the Coun-  
 cil authorised the same, and wrote a Letter to the  
 Archbishop, commending his Zeal, and requir-  
 ing him to enjoin the Observation of it in all  
 other Diocesses of the Kingdom.

In the Year 1657, on the 8th Day of *July*,  
 there was an Earthquake at *Bickley* in *Cheshire*.  
*Heath's Chronicle*, p. 395.

On the 19th of *January*, 1665-6, towards the  
 Evening, a small Earthquake was felt at divers  
 Places near *Oxford*. At *Oxford* itself it was not  
 perceived ; Dr. *Wallis*, who, gave an Account of  
 it to the Royal Society, says, that about that Time  
 he was sensible of an odd Shaking or Heaving in  
 his Study, which he supposed owing to Carts and  
 Coaches, though a little different from what is  
 usually felt on these Occasions. It was per-  
 ceived at *Belchington*, above five Miles North of  
*Oxford*, and also at *Bosfol*, *Horton*, *Stanton-St.*  
*Johns*, and so towards *Wheatley*, four Miles to  
 the East of *Oxford* ; though it was not felt at the  
 same Time, at all these Places, but moved suc-  
 cessively from *Blechington*, to *Wheatly*. Mr *Boyle*,  
 riding between *Oxford* and a Lodging he had about  
 four Miles from that Town, observed in that short  
 Space of Time, that from a settled Frost, the Wind  
 changed



changed and it began to rain. Soon after he got Home, he felt a manifest trembling in the House, which stands high in respect to *Oxford*; But he should not have taken Notice of it as an Earthquake, if it had not been perceived by the People of the House. Soon after there happened a brisk Storm; on which he sent to make Enquiry at a Place called *Brill*, which standing higher, might be supposed more liable to the Effects of the Earthquake, and he was informed it was very considerable there, and that a Gentleman's House in that Neighbourhood, shook very much, so that the Stones in the Parlour manifestly moved to and fro. The Hill on which this *Brill* stands is stored with mineral Substances of several Sorts. Mr. *Boyle* adds, that he was told, this Earthquake reach'd a great many Miles.

On the 17th of *September*, 1683, there was an Earthquake at *Oxford*, of which we have this Account in the *Philosophical Transactions*. That it was a very clear and calm Day on which it happened; that *Ignes Fatui* were seen a few Days before; that the Earthquake was accompanied with a hollow Murmuring, like a distant Thunder, and that it was more felt within than without Doors. The Extent of this Earthquake was but about 70 Miles; its largest Distance was from South-east to North-West; the least from North to South.

Mr. *Pigot*, who gave an Account of this Earthquake to the Royal Society, observed, that the latter Part of the first Week in *September*, was so rainy, that Many were apprehensive of a Deluge;

the 9th of *September* there fell some very considerable Showers in the Afternoon, but from that Time it cleared up, and to the End of the ensuing Week, it continued very warm and pleasant Weather; the 16th in the Evening was inclinable to Frost, and the next Morning it was a very hard Frost for the Season; and then about 7 o' Clock, the Day being very clear and calm, the Earthquake happened. Dr. *Wallis* and Mr. *Boyle* made the like Observations of Cold preceeding the Earthquake of 1665-6; the Quick-silver in the Barometer stood as high then as at any Time for three Years before, which together with a remarkable Calmness of the Air, may be sufficient to shew how free the Air was from Vapours at that Time, and surely the fewer there were above, the more may be supposed below. It may be also observed, that the Heats and Fermentations within the Earth, are augmented by frosty Weather, when the Steams, being more pent up, work more forcibly upon each other.

There was another Earthquake, far more considerable, on the 9th of *October* following, in *Oxfordshire*, about 11 o' Clock at Night, which was perceived much Northwards, and spread all over the Mid-land Countries, and extended into *Derbyshire*, in which, as in the Coal Countries, it was very violent.

On the 8th of *September*, 1692, about Two in the Afternoon, an Earthquake was felt in *London*, and in several Parts of *Essex*, *Kent*, *Sussex*, *Hampshire*, &c. as *Sheerness*, *Deal*, *Sandwich*, *Maidstone*, *Portsmouth*, &c. the People in many  
Places

Places leaving their Houses, and retiring into the Fields. It was also very sensibly felt in *Flanders*, *Germany*, and *France*; and King *William III.* who was then in his Camp at *Grammen*, in an old decayed House, it shook so much, that those who were about the King, thought it was ready to fall, and prevailed on him to rise from Table and go out of it. This Earthquake lasted about two Minutes, and affected Places most on the Sea-Coasts, and near great Rivers; and as it was felt both here and beyond the Seas, Mr. *Ray*, in his *Phys. Theol.* observes, that the inflamed Damp which caused it, was lodged deep in the Earth, the Caverns that contained it, passing under the Bottom of the Sea.

In 1703 an Earthquake was felt at *Hull*, on the 28th of *December*, about five in the Evening. It heaved up Chairs and Tables, and made Pewter Dishes, and the Windows rattle; shook all the Houses, and threw down Part of a Chimney; the Shock came, and went suddenly, and was accompanied with a Noise like Wind, though there was then a perfect Calm. It was felt much in the same Manner at *Beverley* and other Places, and particularly at *South Dalton*; it was more violent near *Lincoln*, where it heaved up the Chairs People sat on, &c. It was felt pretty much at *Selby*, as also near *Navenby*, the sudden Noise of which, seemed to be like the rumbling of two or three Coaches driven furiously, and it shook the Chairs on which People sat, and even the very Stones were seen to move. There was a violent Storm a little before it, and at *Leeds* there was a  
much

much greater Storm the preceeding Night and next Day, than was in the South Parts of *England*.

In the Year 1727, there was an Earthquake in *Kent*; it was felt very sensibly at a Farm on a Hill called *Skeat-Hill*, about eight Miles South-West from *Dartford*; and that same Morning, a Piece of Ground in a Meadow in *Farningham* about five Miles South of *Dartford*, fell in so as to leave a Pit about eight or ten Feet over, and nearly of the same Depth, and being on the same Level with the River, it was, when seen that Morning, filled with Water, within three or four Feet of the Top, though that Spot of Ground was supposed to have been as found as any Part about it, Carts having several Times gone over that very Place. In *February*, 1728, an Earthquake was felt at several Places in *Scotland*, but without Damage.

In 1731, there was another at *Aynbo* in *Northamptonshire*; Mr. *Wasse*, Rector of *Aynbo*, says that about 4 a clock in the Morning on the 10th of *October*, his Windows rattled as if some Body had been dancing over Head. The Concussion lasted about a Minute, though others thought it lasted about two Minutes. It alarmed the Neighbouring Villages of *Bloxham*, four Miles South West of *Aynbo*; *Barford*, five; *Banbury*, four Miles West; *Aderbury*, a Mile West; *Crowton* a Mile to the East; and *Charleton*, as much to the North: There was no Notice taken of its Progress South or South East. About a Minute after, some of the Town of *Aynbo* saw a  
great



great flash of Lightning. In the Morning the Sky look'd of a Land Colour: It was said, that there was a former Shock felt *October* the 8th, about 3 in the Morning, and that the latter was preceded by a Noise like distant Thunder. It is remarkable, that this Shock at *Aynbo* was perceived to extend more from East to West, than from North to South.

On the 25th of *October*, 1734, between three and four a clock in the Morning there happened an extraordinary Earthquake in *Suffex*, Accounts of which were transmitted to the *Royal Society*, by His Grace the Duke of *Richmond*, and by Dr. *Edward Bayley*, of *Havant* in *Suffen*. His Grace observes that the Shock was vastly more felt towards the Sea Side, as at *Shoreham*, *Tarring*, *Goreing*, *Arundel* and *Havant*. At His Grace's House at *Goodwood*, near three Miles North of *Chichester* and about seven from the Sea, it was not so perceivable as at *Chichester*, where it was still less so than by the Sea-Side. Dr. *Bayley*, says the Shock was so considerable as to be felt by one or other in most Houses of the Town of *Havant*, though by Accounts of the same from some other Places, it seem'd to have been more violent than at *Havant*. The Dr. who happened to be awake at the Time perceived the Bed shake under him with a quick tremulous Motion, which continued above two or three Seconds, and then ceased; and after a very short Intermission, was repeated in the same Manner, and lasted about the same space of Time, as near as he could guess. Several Persons

sons at *Havant* affirmed they not only perceived the shaking of their Beds, but also the rocking of their Houses, together with a rumbling Noise of Drawers, and the like moveable Goods in their Chambers and other Rooms. An ingenious Gentleman at *Havant* informed Dr. *Bayley* that the Motion of his Bed appeared to him like the tossing of a Vessel when it crosses over a Wave, the Head and Feet thereof rising and falling alternately several Times, whereas the Dr's. seem'd rather to rock from Side to Side; but these contrary Motions arose from the different Situations of the Beds, the Doctor's standing North and South, and the other's directly East and West. The Dr. is inclined to think the Progressive Motion of this Earthquake to have been from East to West, because it appears from the best Accounts he had of it, that it was observed sooner East than Westward, and likewise extended farther from East to West than from North to South, which particular was likewise observed in the Shock felt at *Aynho* in *Northamptonshire* in 1731. Dr. *Bayley* proceeds to take Notice of some remarkable Phænomena which happened before and after, as well as some other Circumstances which immediately attended this Earthquake, most of them agreeing with those Signs which have been observed by the Learned to precede or accompany former Earthquakes, in these and other Parts of the World. It was observable, that there was more Rain and Wind for several Months successively, than for many Years before, especially from the Beginning to the  
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Middle of the Month in which the Earthquake happened, about which Time it cleared up, and the Weather became suddenly very cold, with frosty Mornings, the Wind blowing generally pretty hard from North West. On the 23d of *October* the Cold abated considerably, and it was cloudy, but no Rain that Day. The 24th it was calm all Day, and rained most Part of the Afternoon, though the Mercury stood at 30 2 10ths. It continued very calm all Night, and rained hard for some Time before and after the Earthquake, but it soon cleared up, and a strong Gale of Wind arose within half an Hour, or, as some said, within a Quarter afterwards, which continued blowing hard all the Forenoon. The Circumstances related by his Grace the Duke of *Richmond*, and by Dr. *Bayley*, were confirmed by the united Testimonies of several Persons of Veracity, who signed Certificates of what they observed concerning this Earthquake at *Chichester*, and other Places. Mr. *Green*, Prebendary of *Chichester*, had Information of the Earthquake being attended with the same Circumstances at *Shoreham*, *Goreing*, *Tarring*, *Findon*, *Arundel-Castle*, and *Morston*; and one Mr. *Jenkins* of *West-Wittering*, near *Braglesbamby* in *Sussex*, relates, That within a Quarter of a Mile of his House, a young Man having been at the same Time to fetch a Team of Horses from Grays, the Horses were so sensible of something more than ordinary, that they stamped and seemed very much affrighted as they were coming Home. This last is a Circumstance that has been taken Notice of in great

Earthquakes abroad, that the Horses have stood as if astonish'd, foamed at the Mouth, and discovered other extraordinary Signs of Fear.

On *Friday* the 13th of *May* 1737, in the Morning, the Inhabitants of *Ludlow, Bishop's Castle*, and several other Places in *Shropshire*, felt the Shock of an Earthquake while they were in Bed.

On *December* 29, 1737, there was an Earthquake at *Scarborough*, the Account of which was sent to the Royal Society by an Eye-Witness, and is as follows.

The Ends of several Inclosures or Fields behind the Clift, on the Back of the *Spaw*, sunk down very low into the Ground, making a large Valley of a vast Length, and considerable Breadth, with five Cows then grazing on it, the Weight of which shook and opened the Hill behind the House after a frightful Manner, and forced up the Sands an hundred Yards in Length on each Side the Space, and 27 broad, to the Height of six Yards, and in some Places ten Yards high, The Pier, entire as it was, moved side-ways out of its Place, and rose up about five Yards in the Air; the House fell down, and at the same Time took Fire. The Flag House and wooden Rails, which were about the Mouth of the Well, were forced up in the Air above ten Yards high, so that it was feared the *Spaw* Water would have been lost for ever, but happily it was soon after recovered as good as before. The Tide being out at this Time, the Sands were observed to rise gradually to the Height above-mentioned from 12 o' Clock at Noon, till it was dark. No Body came by any Hurt,



Hurt, the People of the House which fell, getting away in Time.

On the 30th of *December* 1739, about 7 o' Clock in the Morning, a terrible Earthquake was felt in several Places in the *West Riding* of *Yorkshire*, the Plates and other Utenfils ratling and rolling out of their Places, and People in their Beds fearing to be tumbled out. It seemed as if the Earth had moved out of its Place in a Line parallel to the Horizon, and again returned to its former Situation with reciprocal Vibrations, and ended with a hollow report and a Rumbling Motion.

These are all the Earthquakes that have happened in our Country, at least all of which we have any Particulars transmitted down to us; some lesser ones there may, perhaps, have been, that are not taken Notice of, or of which there are no particular Accounts now extant: We shall, therefore, conclude this Account with these two Observations, That we ought not to make Light of this dreadful Phænomenon, because it is capable of being solved by natural Causes; that if we have had few, and those inconsiderable Earthquakes, in Comparison of other Parts of the World, we ought not, therefore, to think we deserve better of Providence, than those Nations which have felt more of its afflicting Hand; on the contrary, when a Country is visited with a Calamity so unusual, and to which it is not naturally subject, it ought the rather to be regarded as a Lesson of Instruction, as the supernatural Interposition of Providence, to awaken those who  
either

either abuse, or disregard its Blessings, and to bring them to a Sense of their Duty to, and Dependance on, the Almighty, and if, by his Mercy, it does not consume them, it ought, at least, to alarm and admonish them.

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